



Preparation for Ergonomic Activities of Students of Pedagogical Educational Direction

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Abstract: The article substantiates the relevance of ergonomic knowledge, skills and abilities in organizing an ergonomic learning environment in schools and developing the ergonomic culture of modern school teachers. It also examines such problems of the ergonomic system as saving the labor of teachers and students, and the teacher's participation in creating a comfortable, effective and safe educational environment at school.

Keywords: Ergonomics of education, ergonomic culture of the teacher, ergonomic educational environment.

Introduction: Considering the formation of a well-rounded person in higher educational institutions of pedagogy, students of pedagogic education are trained to receive regular knowledge of educational modules and blocks, the need to acquire knowledge, basic educational-scientific and general cultural knowledge, spiritual and moral qualities based on national and universal values, professional development, creative thinking and conscious attitude to the environment. Education based on the main principles of education, educational standards and educational programs, is the comprehensive development of the young generation based on a specific goal and socio-historical experience.

The establishment of a pedagogical process that guarantees the educational result, which is organized on the basis of a specific project in a systematic process aimed at the development of the mind, behavior and worldview of students, requires an ergonomic culture based on knowledge, skills and competencies in pedagogical ergonomics from future teachers of pedagogy. Ergonomic culture serves to ensure the effectiveness of teaching and learning processes, including distance learning using the Internet and information and communication technologies,

organization based on a specific project, use of the most effective methods in pedagogical processes aimed at achieving specific goals and guaranteeing educational results, selection of educational and training technologies, and organization of teaching processes.

Relevance of the topic. The educational process in higher education includes the following processes: upbringing, education, formation and development of the personality of qualified personnel, etc. All of this is aimed at training highly qualified competitive personnel, which is determined by the insufficient study of the activities of students and professors, the social environment between students and professors and its health, the material and technical support of the educational institution, established cooperative relations, and a number of other factors.

Purpose of the study. The educational process is a search for ways to solve pressing problems: the workplace, the processing of materials, the transformation of human musculoskeletal systems, the layout of the workplace, reliability and health; organizational ergonomics is the development of proposals and recommendations for solving issues related to the optimization of socio-technical systems and their organizational structures and management processes.

A brief analysis of scientific research on the topic. Foreign researchers K. Bikshe, J. Giedrovits, R. Smith, L. Sidorchuk analyzed the ergonomic competence of teachers and showed the expediency of improving professional activity in modern educational conditions of schools, based on the responsibility of pedagogical activity and the ergonomic environment of the educational process.

The problems of ergonomics in education have been studied in detail in the studies of Russian scientists A.A. Belov, E.V. Voronina, R.S. Gershunskaya, A.A. Kriulina, L.P. Okulova, N.A. Pugal, E.S. Rapatsevich, E.V. Ryabova, R.S. Safin, S.F. Sergeev and others.

In Uzbekistan, we can find ideas on the formation of ergonomic competence of young people in the spiritual and cultural heritage of our people "Avesta", as well as preliminary information in the works of Abu Nasir Farobi, Abu Raykhan Beruni, Abu Ali ibn Sino. The scientific research of researchers S.Kh. Abdullaev, N.A. Abdullaeva, N.Kh. Kirgizova also substantiated that a person, his attitude to the environment, spiritual, moral, ergonomic qualities are of decisive importance in the development of society. However, in their scientific research, the current aspects of the problem of ergonomic culture of future teachers of pedagogy were not investigated.

The scientific essence of the article is that our scientists have not sufficiently studied the ergonomic approach to the educational process and the preparation of future pedagogic teachers for ergonomic activities, the impact of the ergonomic principles of teaching on the educational process.

The object of the study was the process of preparing future teachers of pedagogy for professional pedagogical activity in higher educational institutions.

METHODS

Methods used in the research: systematic, comparative-logical analysis, empirical observation and the results of questionnaires were used.

Main part

The term "ergonomics" was first used by the Polish naturalist V. Yaszczembowski in 1857, who referred to the science of labor based on the laws of nature. The origins of ergonomics education were laid by Ananiev A.B., Alekseev N. G., Zinchenko V. P., Munipov V. M. Shein A. B., Leontiev A. N., Lomov B. F. . In general, ergonomics is a scientific discipline that comprehensively studies a person in the specific conditions of his activity in modern production.

Since 1986, a new discipline devoted to ergonomic problems of education has appeared in the journal "Ergonomics Abstracts" - Education, first described by the Russian researcher A. A. Kuligina in his work "Ergodesign in the World of Education".

However, interest in solving educational problems arose among ergonomists much earlier. In 1980, a special group was formed in the Human Factors Society to identify promising directions in ergonomics. One of the 8 directions recommended by the group was the creation of a system of education and training. It should be noted that in the past, this direction of ergonomics developed only in relation to the profession of operators, focused on the study of human labor activity in connection with technology.

A number of authors believe that the principles and recommendations of ergonomics can be transferred from the production process to the pedagogical process. In particular, Zinchenko V.P. quite rightly emphasizes that "there is a need to create pedagogical ergonomics." "Although ergonomics studies the "man-machine" system, many of its conclusions and recommendations can be used to improve the educational process at school," says A.A. Chentsov. By synthesizing the achievements of a number of labor sciences and technical disciplines, ergonomics can contribute to the establishment of relevant interdisciplinary connections and the proper organization of the educational process itself. One of the methods for comprehensively solving

the problems of working with complex modern technologies is the use of an ergonomic approach. Taking into account ergonomic requirements and using its recommendations when designing school equipment, visual aids, creating the necessary comfort in the classroom, undoubtedly has a positive effect on the process of acquiring knowledge, abilities and skills by students, and improves the educational system as a whole.

Educational ergonomics, on the other hand, is based on the ideas of cognitive ergonomics (cognitive ergonomics) and seeks to apply them in the field of education. Cognitive ergonomics is a science about how to improve and facilitate mental labor. Educational ergonomics is a science about how to improve and facilitate educational activities.

Organizational ergonomics studies issues related to improving the efficiency of educational institutions in organizing the educational process, optimizing the organizational structures and management processes of the educational process, and rationally organizing and managing the system of interpersonal relationships, human resource management, project development, cooperation, and teamwork.

It is also necessary to take into account the following factors when organizing a modern educational process:

- changing methods of learning;
- the introduction of modern educational technologies, opening up opportunities for changes in teaching methods and content;
- the changing role of the teacher in the learning process;
- the opening up of wide opportunities for distance learning and education.

In the modern era, there is a need to provide high-quality education and organize the educational process. With the increase in the sources of education, a new concept of education has emerged: lifelong learning, continuous learning, etc. In this regard, one of the modern requirements is to radically improve the quality and efficiency of the educational process, study the ergonomic aspects of the educational process, and take a systematic, integrative approach to improving the quality and efficiency of the activities of the subjects of the educational process and higher educational institutions. As a result, it is clearly evident that the disciplines in the "Pedagogy" category studied in higher education institutions should be studied in close connection with the disciplines of ergonomics (organization of a safe and comfortable educational environment), economics (identification of economic

needs and resources in the process of designing educational development), psychology (taking into account the psychological state of students), sociology (identification of social needs in education), medicine (study of the state of health of students, creation of special conditions for students with physical development and health problems), physiology (taking into account the physiological and age characteristics of students), philosophy (use of a universal approach and philosophical concepts), mathematics (application of mathematical calculation methods in pedagogical diagnostics and pedagogical research), history (study and application of historical experiences of education), and anthropology (comprehensive approach to man as a subject of education).

In our opinion, the following issues are of great importance in the teaching of pedagogical ergonomics: ergonomics of the educational and educational environment, issues related to the biomechanical, physiological, anthropometric, anatomical characteristics of a person related to labor in the educational and educational process. The educational process involves the search for ways to solve urgent problems: the workplace, changes in the human musculoskeletal system, workplace layout, reliability and health; organizational ergonomics involves solving issues related to the optimization of socio-technical systems and their organizational structures and management processes, etc. It also studies the system of interpersonal relations, human resource management, project development, cooperation, rational organization and management of teamwork; cognitive ergonomics studies the finding of connections between mental processes (perception, memory, decision-making, etc.), and the relationship of a person with other elements of the system. Problems such as intellectual labor, decision-making, skilled execution, human-computer cooperation are considered. In this process, attention is paid to the issue of continuous education and professional training of a person in the design of socio-technical systems and concepts are given. Ergonomics plays a special role in rationally solving the problems of preparing students of the pedagogical direction for ergonomic activities.

The selection and systematization of educational materials, while adhering to the principles and criteria for determining the content of education, taking into account the ergonomic requirements for the educational material base and educational tools of an educational institution, allows for effective modeling of educational materials. As a result, the harmony of epistemological, organizational, psychological, didactic, sociological and cybernetic laws is achieved in the educational process, while adhering to the general laws,

regularities and principles of the integrated pedagogical process. Taking into account the interconnectedness and generality of the components of the educational process, the effective use of the main and auxiliary forms of organizing the educational process, the effective organization and spending of students' free time, requires the development of the creative competence of future teachers of pedagogical science and their preparation for ergonomic activities. The level of their ergonomic competence depends on the professional qualifications of teachers of pedagogical science working in an educational institution, their work experience in relevant functional tasks, knowledge of functional tasks in accordance with the field of their profession, their initiative, and their creative approach to work, as well as their qualities such as objectivity, openness, personal and professional competence, practical experience, management skills, responsibility, and initiative.

Педагогика олий таълим муассасаларида педагогика йўналиши In preparing students for ergonomic activities, it is important that they act rationally based on ergonomic requirements to increase the effectiveness of education and upbringing, be true masters of their profession, fully master all aspects of organizing a safe and comfortable learning process, be extremely responsible for their duties, and have the ability to ensure the safety and comfort of the educational process. Also, future teachers of pedagogical science are required to have an ergonomic culture, initiative, personal qualities, systematic analysis and decision-making skills, and implement appropriate and effective ways to fulfill professional tasks based on ergonomic competence.

Today, the transformation processes in education are underway, its structural restructuring involves changing and updating educational programs taking into account modern global achievements in education, science, engineering and technology, economy and culture.

The widespread adoption of advanced technologies, positive changes in the economy, the expansion of the scale of foreign investments, the development of entrepreneurship, small and private business, as well as the integration of continuing education with science and production, the introduction of an integrative approach to education in accordance with the abilities and capabilities of students, will serve as the basis for the development of advanced innovative technologies of education, the creation of modern educational and methodological complexes, and the improvement of the system of organization and management of pedagogical processes in accordance with ergonomic

requirements.

This, in turn, imposes new tasks on the professors and teachers of higher educational institutions on the organization of the preparation of students of pedagogical specialties for ergonomic activities, the implementation of world-class achievements of education, science, engineering and technology, the organization and management of pedagogical processes based on ergonomic requirements, as well as on the positive resolution of existing problems in the direction of ensuring the effectiveness of pedagogical processes.

In the field of preparing students of the pedagogical direction for ergonomic activities in higher educational institutions of pedagogical education, the level of preparation of students and the level of knowledge that must be mastered, as well as the general qualification requirements for graduates of higher educational institutions, the process of preparing students for ergonomic activities requires the creation of the content of the process, further improvement of the content of education and teaching methods, and the use of the most effective technologies of innovative education.

The need to form the necessary knowledge, skills and qualifications in ergonomics remains urgent in the requirements for the level of preparation of students studying in the pedagogical direction in higher educational institutions of pedagogical education, the qualifications and skills that must be formed in them in subjects, the content of knowledge that must be mastered, and the content and components of educational programs.

Based on the above-mentioned points, it can be said that the directions of preparing students for ergonomic activities include an integrative and andragogic approach, the distribution of hours according to the content and essence of subjects in the creation of work programs for subjects, as well as the provision of interrelationship and dependence of subjects in the design and organization of the educational process, the mutual coordination of the goals and tasks of subjects, and in turn, the use of hours allocated for subjects in the curriculum serves to increase the quality and efficiency of the educational process in preparing for practical professional activities, to broaden the importance of topics, to expand students' ergonomic outlook and understanding, to develop their interest in their chosen profession.

RESULTS

Results and practical examples.

Taking into account the characteristics of the impact of objective and subjective factors affecting the preparation of students of the pedagogical direction for

ergonomic activities, we identified criteria and indicators for assessing the level of formation of students' ergonomic competencies (high, medium, low):

- a) the cognitive characteristic characterizes the knowledge of students about the ways of creating an ergonomically convenient environment;
- b) motivation determines the attitude of students to the problems of forming an ergonomically convenient educational environment;
- c) integrative activity indicates the acquisition of ergonomic abilities and skills to create a comfortable, effective and safe educational environment in a modern school.

Thus, a group of students was asked to answer test questions about ergonomics and its place in the education system. Students of pedagogical directions participated in the test tests. As a result, only 12% of students said that they were familiar with the concept of ergonomics and had an idea of using ergonomics, of which only 9% said that they had heard about the use of ergonomics in the education system. Such a low level of awareness of ergonomics and its place and status in the education system allows us to assume that they are not sufficiently prepared to create a comfortable and safe learning environment in

accordance with the professional standards of future teachers of pedagogy. When students answered the open-ended question "What should be the conditions for creating a comfortable environment?", 39% of the students indicated that they used the subject "Physical Culture and Sports", and 21% - the subject "Life Safety". Thus, only 8 people could have reflected the conditions for creating a comfortable environment in the ergonomic component, since they expressed their opinions that they independently studied some concepts when studying the basics of ergonomics in the subjects "Life Safety" and "Physiology and Hygiene of Youth". In general, most students have a low level of competence in what conditions should be for creating a comfortable environment.

The learning environment formed in a modern school should be flexible, allowing the educational process to be updated in accordance with the trends of the time and forming the basis of the school in the future. The effectiveness of teaching in the classrooms, classrooms and workshops of a general education school depends on the creation of a comfortable environment for students, including its components. We summarize the conditions for creating a comfortable environment and present them in Table 1 below.

Table 1.
Conditions for creating a comfortable environment

Components	Conditions of application
Material and technical	Sufficient space; availability, location and condition of equipment, instrumentation; provision of standard materials, reagents, etc.; high-quality and timely maintenance of equipment; compliance with occupational safety and fire safety requirements.
Sanitary and hygienic	Normal natural and artificial lighting; compliance of buildings, their condition and maintenance with sanitary and hygienic standards and requirements; reasonable temperature conditions, air exchange and ventilation; minimum level of dust, gas content, noise; reasonable air humidity; equipment with sanitary and hygienic means and first aid supplies.
Aesthetic	Buildings according to design requirements and color scheme for painting equipment; beautification; design style and content.
Technical and pedagogical	Maintaining a reasonable work regime for students; providing each student with a standard equipped workplace; equipping the workplace of an individual

	teacher; creating conditions for individual and group forms of work; compliance with the requirements of organizing labor on a scientific basis.
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CONCLUSION

Regular improvement of ergonomic competences of pedagogic students in higher educational institutions of pedagogy involves the fulfillment of a number of tasks, i.e.

- creating the necessary conditions for the subjects of the pedagogical process,
- organizing, coordinating, monitoring, analyzing and evaluating their activities,
- as well as creating and strengthening the material and technical base for the implementation of this process,
- equipping them with new pedagogical and information technologies,
- providing them with highly qualified specialists.

Therefore, managers and teaching staff responsible for organizing and managing pedagogical processes in higher educational institutions and ensuring their effectiveness must have not only pedagogical experience, but also sufficient competencies in a number of areas, such as ergonomics and management, pedagogical ergonomics.

Therefore, future teachers of pedagogical science need special training to teach ergonomic knowledge that ensures the performance of labor functions in accordance with professional standards.

In conclusion, it can be said that in the process of developing ergonomic competence, it is necessary to monitor the level of formation of its components such as ergonomic knowledge, skills, thinking, orientation in students. If various types of control are carried out during the educational process, the presentation of ergonomic knowledge and skills, and gaps in students' educational activities and knowledge are identified and eliminated in a timely manner, in our opinion, ergonomic culture will improve and develop in students of pedagogical education.

Based on the conclusions, we make the following practical suggestions:

1. There are no specific features of the work on the ergonomic characteristics of teaching programs for teaching pedagogy.
2. Pedagogy is characterized by a high level of abstraction of educational material. A significant increase in the effectiveness of computer exercises with a high ability to visualize complex subjective

relationships and simulate various pedagogical processes can be achieved by using high-quality computer training programs built taking into account psychological, pedagogical and ergonomic requirements.

3. If various types of control are carried out during the learning process, ergonomic knowledge and skills are presented, and gaps in students' educational activities and knowledge are identified and eliminated in a timely manner, in our opinion, the ergonomic competencies of students in the pedagogical direction will develop and their preparation for ergonomic activities will improve.

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